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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/223,472	12/30/1998	KEVIN J. LEE	042390.P6604	1561

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MICHAEL A BERNADICOU
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 900251026

EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1741

18

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO. <u>MF</u>
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DATE MAILED:

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

☒ Responsive to communication(s) filed on 2/14/2002 with a COM dated 1/30/2002

☒ This action is FINAL.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 1-5 and 18-33 is/are pending in the application.
Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-5 and 18-33 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

-SEE OFFICE ACTION ON THE FOLLOWING PAGES-

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Receipt of the amendment filed on February 14, 2002, with a certificate of mailing dated January 30, 2002, is acknowledged. Claims 1-5 and 18-33 are pending.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5 and 18-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant's amendments have helped to clarify the claims. However, the scope of the claims is considered to remain indefinite. Applicant has amended independent claims 1 and 18 to include the limitation "when viewed from the front". However, what is considered to be "the front" has not been defined. In claim 1 it appears that applicant is referring to the enclosure but has not specified a manner for determining what section of the enclosure is "the front". Claim 18 is similar but refers to a chamber rather than an enclosure.

Claims 1 and 18 recite that the outlet is at an angle other than normal to the surface. However, dependent claims 24 and 31 recite that at least one of the spray outlets is pointed in a perpendicular direction toward the substrate. This seems to

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be the direction excluded in independent claims 1 and 18. It appears that dependent claims 24 and 31 should clarify that the outlets recited are in addition to, rather than being one of, the outlets recited in claims 1 and 18.

In claim 23, line 2 "radical" should be --radial--.

Claim 33, line 3 refers to "the cross pattern". This expression lacks antecedent basis. It appears that claim 33 should be dependent on claim 32 rather than claim 27. Note that similar claim 26 depends on claim 25.

The amendments to the claims are deemed to have overcome the rejections of record under 35 U.S.C. 102 and 103. The following new rejection of the claims as amended are made.

Claims 1, 3, 4, 5, 18, 19, 22, 23, 27, 29 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Norris (4,151,062), newly cited.

Norris discloses apparatus for electrolytically depositing metals onto a substrate which is connected as a cathode. The apparatus may be used for recovering valuable metals (column 1, lines 5-6). Column 6, lines 44-50 disclose a flash coating of copper as recited in instant claim 5. Norris teaches that directional nozzles dictate the plating pattern (column 1, lines 9-10). The apparatus is illustrated in figures 2, 3 and 4. Electrolyte is introduced through a plurality

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outlets which are off-center from the central axis of the substrate normal and are at an angle which is other than normal to the surface. Norris teaches that the nozzles are arranged to move the solution in a circular pattern (column 2, lines 47-50).

Thus, the flowing liquid would have a circumferential and radial component as recited in instant claims 23 and 30 and be directed radially outward as recited in instant claims 22 and 29.

Claims 1-5, 18-24, and 27-31 rejected under 35 U.S.C. 103(a) as being unpatentable over Mori (5,443,707) in view of Norris.

Mori is taken as in the previous office action and Norris is taken as above. As previously pointed out, Mori is directed to a process of electroplating a metal onto a substrate. The substrate may be located to form a seal as recited in instant claim 2. See, for example, figures 3 and 6. The electrolyte is injected in a plurality of directions, one of which is perpendicular to the substrate as recited in instant claims 24 and 31. Note the direction of the flow shown in figure 6. It would have been obvious to have utilized additional nozzles in Mori as shown by Norris because increased solution flow would have been obtained and the plating pattern would have been better controlled as taught by Norris.

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Claims 1, 3-5, 18, 19, 20, 22, 23, 24, 27 29, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Eidschum (4,443,304).

Eidschum discloses a process for electroplating a metal such as copper onto substrate such as printed circuit boards. The circuits boards are connected as a cathode to allow electroplating to take place. The electrolyte is injected through a plurality of nozzles which are off-center from a central axis of the substrate and at an angle other than normal to the surface of the substrate. Eidschum teaches that nozzles can be angularly adjusted to impinge directly or at an acute angle on the printed circuit board substrates. See the abstract and column 1, lines 41-44. Figures 3, 4, 5 and 8 show the nozzles in the apparatus used to perform the electroplating process. The nozzles are positioned in accordance with the limitations now recited in instant claims 1 and 18. Since the nozzles are positioned in the same way, the flow characteristics would be expected to be the same.

Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eidschum.

Eidschum is taken as above. As previously noted, Eidschum teaches that the nozzles impinging directly of at an acute angle. This would have suggested to one of ordinary skill in the art any acute angle, including an angle of 20 to 60 degrees as recited in instant claims 21 and 28. Thus, it would have been obvious at the

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time the invention was made to have angled a nozzle at an angle of 20 to 60 degrees in the process of Eidschum because Eidschum broadly teaches the use of an acute angle.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Sato et al patent (4,981,559) is directed to a process of electroplating using liquid injection. The apparatus is illustrated in figures 1 and 2. As shown in the figures, the workpieces to be plated are placed in the central region. Electrolyte is introduced through a plurality of nozzles 11. Each nozzle is constructed so that the injection angle through the nozzle can be adjusted in all directions (column 2, lines 59-61).

Claims 25, 26, 32 and 33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. These claims recites that the plurality of spray outlets includes at least four spray outlets forming a cross pattern. The prior art of record does not suggest such a cross pattern along with the limitations added to claims 1 and 18 by the amendment.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Leader, whose telephone number is (703) 308-2530. The examiner can normally be reached Mondays-Thursdays and every other Friday from 7:30 AM to 4:00 PM eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached at (703) 308-3322. The fax phone number for *official* after final faxes is (703) 872-9311. The fax phone number for all other *official* faxes is (703) 872-9310. Unofficial communications to the Examiner should be faxed to (703) 305-7719.

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Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0661.

WTL

William Leader:wtl
May 31, 2002


NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700